

Project Title

Upgrade of Control Console Instrumentation and Monitoring Equipment
at the PULSTAR Reactor

Applicant Name: North Carolina State University

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ABSTRACT:

The objective of this project is to upgrade components of the PULSTAR reactor control console instrumentation and monitoring equipment. This upgrade will result in: (1) increasing the reliability of critical monitoring channels by replacing obsolete electronics with new state-of-the-art instrumentation, (2) increasing the level of redundancy and backup functionality between channels to eliminate the possibility of critical failures leading to extended facility shutdowns, and (3) provide an expanded operational range to support 2 MW operations. These instrumentation upgrades will significantly improve the operational reliability and safety of the PULSTAR and support enhanced capabilities in education and research.

Nuclear Engineering education at NCSU has a long and prosperous history. In fact, one of the nation's first programs of nuclear engineering was established in 1950 at what was then known as North Carolina State College. Alongside the academic program, the first nuclear reactor on a university campus was also established. Furthermore, in 1972 the 1-MWth PULSTAR nuclear reactor was established on the campus of NCSU as an essential nuclear engineering education facility and a multidisciplinary research tool that supports the various facets of science and engineering. Since 2004, the PULSTAR has been serving as a regional educational facility and provided reactor laboratory courses (over the internet) to nuclear engineering students nationally and internationally.

As it can be seen from the above, the proposed upgrade will be integrated into a very active nuclear engineering education and research environment. Consequently, it is expected to have direct impact on the operation, safety and reliability of the PULSTAR reactor and to enhance its utilization by various user groups including academic faculty, staff and students, and engineers and researchers nationally and internationally.